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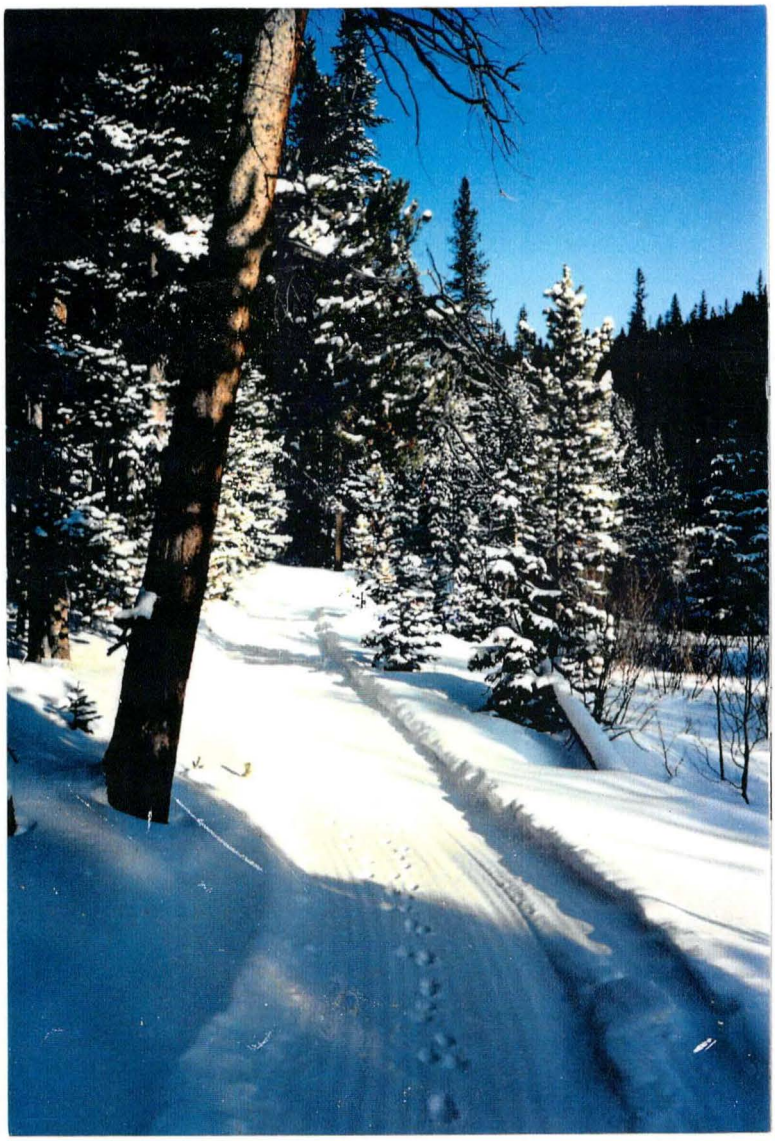
A CASE STUDY ON THE PITFALLS OF PLANNING, DEVELOPMENT AND MANAGEMENT OF CROSS COUNTRY SKI TRAILS.



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A CASE STUDY ON THE PITFALLS OF PLANNING, DEVELOPMENT AND MANAGEMENT OF CROSS COUNTRY SKI TRAILS.

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Clemson Class of 1992
June 1993 - Final Copy

This paper was prepared as a student project in partial fulfillment of the requirements of the Professional Development for Outdoor Recreation Management Program at Clemson University. It in no way reflects USDA Forest Service Policy nor are the opinions expressed those of anyone other than the author.

ABSTRACT

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TITLE: A Case Study On The Pitfalls Of Planning, Development and Management of Cross Country Ski Trails

ABSTRACT: This paper discusses how the Snowy Range Cross Country Ski Trail System evolved and provides recommendations for future management and development. It gives a historical narrative of how the trail system started out with sub-standard trails which were not well received by the public, and how the district remedied the situation. The account will be of value to other units which may have trail systems with similar problems.

An up to date analysis of current cross country ski trends and ski equipment will give the reader an idea of how cross country skiing is an everchanging sport and why it is sensible to provide the public with various opportunities ranging from back country skiing to groomed trails.

Current management considerations for both winter and summer operations are discussed with recommendations for turning the ski trails into multiple use trails which can be used year round.

The merits of grooming ski trails, such as increased use, safer trails, longer seasons and how grooming has become an important monitoring method are discussed.

The importance of hiring recreation personnel with active interest and experience in outdoor recreation such as skiing are stressed to insure that trail projects such as this one are done correctly and provide high quality recreational opportunities from the start.

Keywords: Cross Country Skiing, Grooming, Multiple Use Trails, Trail Design

EXECUTIVE SUMMARY

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SUMMARY: The document is intended to provide a management and development plan for the Snowy Range Cross Country Ski Trail System. A historical narrative describes how the district initially cut approximately 35 miles of ski trails and ended up with a trail system that received very low use and was not safe for skiing. The main causes which led to the poor trail system included inadequate planning on the part of the Forest Service and their reliance on a classroom generated planning document from the University of Wyoming Geography and Recreation Department. When the trails were initially conceived there was nobody on the district with the expertise to go out into the field and make sure that the planned trails would be safe and provide good skiing. Weaknesses in trail design together with poor route selection resulted in trail system which did not meet skiers needs.

A review of the current management situation shows how the district dealt with the safety problems and what still needs to be done to improve the trails. Suggestions for trailhead development, maps and signing are given as well as marketing techniques which increase use of the trails.

A literature review gives an up to date analysis of the cross country skiing and shows how it is an everchanging sport. The need for various opportunities ranging from groomed trails to backcountry

skiing are explored, as well as a description of the numerous types of equipment skiers use to pursue those activities.

Recommendations for future management of the trails as multi-use trails instead of single use trails (skiing only) are discussed. Currently the trail system is experiencing summer use and various degrees of erosion which will need to be managed sooner or later.

Grooming of ski trails on the district is discussed and mentions how this practice provides for an efficient means of monitoring trails as well as insuring for safe trails. Volunteer agreements have been formed with local groups and individuals who volunteer their time and expertise in exchange for the use of Forest Service snowmachines and grooming equipment.

The importance of hiring employees who have received training in recreation is stressed. These employees also need to have a genuine interest in outdoor recreation and have outdoor skills in order to be effective both in the office setting and in the field. When employees with skills such as these are used in the planning process, trail systems will provide quality opportunities from the start.

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INTRODUCTION

The Snowy Range Cross Country Ski Trail system is located on the Laramie Ranger District, Medicine Bow National Forest on the east side of the Snowy Range Mountains. It is approximately 30 air miles from the city of Laramie, Wyoming, (Pop. 30,000). Access to the Snowy Range Ski Trails is by a two lane paved state highway and is approximately 35 miles from Laramie. The trails are located in the Libby Creek and North Fork of Little Laramie watersheds. The area ranges from 8300 to 9800 feet elevation.

The Snowy Range Mountains are aptly named as they receive a good deal of snow. The lower elevations usually receive 2-3 feet of snow while the higher elevations can receive up to 5-6 feet on the average. The ski season usually lasts from late November to early April. Besides the cross country ski trails, other important recreational opportunities in the area include downhill skiing and snowmobiling. The Snowy Range Ski Area has 3 chairlifts and 1 T-bar and approximately 170 skiable acres. It will undergo expansion within the next ten years and double in size. It currently serves about 42,000 skiers per season. Snowmobiling is also very popular in the area and is a significant boost to the local economy. This use has been popular since the early 1960s and continues to be popular due to the amount of open riding above timberline. The snowmobiles are not allowed on the ski trails, which are located at lower elevations in the trees.

There is rarely any conflict between the two user groups except at two trailheads where there are occasional complaints about skiers and snowmobilers sharing the same parking areas.

Statement of Purpose

The objective of this report is to provide a document that will guide future development and maintenance of the Snowy Range Cross Country Ski Trail System. It gives a historical narrative on how the trail system evolved and a synopsis of the current management situation. The document

will serve as a guide for current and future recreation staff who deal with winter recreation. In 1986, the University of Wyoming Geography and Recreation Department Planning Class completed a plan to develop a cross-country ski trail system in the Snowy Range. The plan included extensive scoping to determine the issues and concerns relative to cross country skiing in the Snowy Range. The plan proposed various alternatives ranging from a no action alternative to alternatives with varying degrees of trail construction. The preferred alternative called for approximately 35 miles of new ski trails which would be marked and signed, along with two parking lots designated for cross country skiers only and trailhead signs at all parking and staging areas.

On March 25, 1987 Forest Supervisor Sonny O'Neal signed a decision notice to accept the preferred alternative with stipulation that certain priorities be set in trail construction dependent upon completion of the parking areas. Also, the parking areas would be designated as Winter Recreation Parking instead of just for cross country skiers. This decision notice stated that this project would be categorically excluded from documentation in an Environmental Assessment or Environmental Impact Statement.

During the summer of 1987, the Laramie District finished cutting approximately 35 miles of new ski trails. At that time I was a seasonal forestry technician working for the Laramie District in the Range/Fire department. During the month of January and February of 1988, the district recreation staff asked me to go out and help mark the new ski trails. As I skied the new trails it became apparent to me that many of the trails were going to be a real problem for the district as far as skier safety and trail maintenance. This observation stemmed from many years of experience in both skiing and as a seasonal technician for the Forest Service. I started skiing at the age of six and skied competitively from grade school through college. I coached and taught skiers of all ages and ability levels in both nordic and alpine skiing. Being a lifelong resident of the area and with my experience with the Forest Service, I feel I have an excellent understanding of the various skiing opportunities in the Snowy Range.

During the winter of 1988, I voiced my opinion to the recreation staff person who was supervising the new ski trail project. At that point I was concerned mostly with the safety aspects of the trails.

Being a young, physically fit, and able skier, I felt like I was risking my health, trying to negotiate the trails. Stumps up to two feet in height, rocks, and slash were very common. Even more dangerous were trees of 1-2 inches in diameter, cut off 10-15 inches above the ground which are best described as pungee sticks waiting to spear a falling skier. Steep hills with no place to reduce speed, often with sharp corners at the bottom, were common. In several spots, the trails crossed side hills with grades over 30 percent, which under certain conditions are avalanche prone.

The recreation staff person, claimed that he had inspected all of the new trails and that in his opinion they were "okay" and that I should continue marking the trails as they were. He felt that the trails would eventually receive enough snow so that the stumps, rocks, and slash would pose no threat to skier safety and that the steep sections and corners added risk which skiers enjoy. In reality, these problems were indeed a safety problem, regardless of how much snow acummulated. The steep sections and sharp corners were dangerous for any level of skier. During the summer, the trails looked innocent enough, but during the winter, the trails became treacherous.

District Ranger Ron Wilcox came to the Laramie Ranger District in 1988. After hearing complaints from other district employees about the same problems I had mentioned, he decided something should be done. He subsequently gave me the lead in bringing the trails up to standard, and allowed me to use my judgement as to how it might be done. From 1988 until May of 1992, I supervised the efforts of both Forest Service employees and volunteers doing trail work. The trails are now in a condition that pose no threat to the safety of the user, but in many places the trails still need considerable work if the district expects the public to use them to any great degree.

Photo 1. Local area LDS Church group volunteers help pile slash on the North Fork Loop, by Tom Florich.

In May of 1992, I was hired as Outdoor Recreation Planner. One of the primary responsibilities of my position on the district is managing winter recreation and dispersed recreation. Currently there is no written document on how the Snowy Range Ski Trails will be managed. Forest Service Handbook 2309.18 requires that all trails have operation and maintenance schedules and provides guidelines on how to develop these schedules. This report will provide needed information for the schedules so that the requirement can be met in both a realistic and timely manner. The project will also make suggestions on how future developments can enhance the trail system to increase user satisfaction and attract more use.

Photo 2. Stumps such as these are dangerous and prevent safe skiing especially in early winter or any time when snow accumulations are low.

Literature Review

Cross Country Skiing has been featured in a wide variety of periodicals, from national magazines like Cross Country Skier, Ski, Skiing, Powder Magazine, Backpacker, and Sunset Magazine. Many books have been written about the sport which inform readers on how to get started, where to go skiing, equipment selection and the history of skiing. It was discovered that much of the literature available quickly becomes outdated due to the everchanging nature of skiing. New equipment and techniques together with improving skills of skiers change rapidly. One of the most recent is Cross Country Skiing by Ned Gillette and John Dostal. It has already been updated three times

since 1988. It gives a great rundown on all types of cross country skiing with a discussion on the past, present and future. Among the best books on backcountry skiing is Cross Country Downhill by Steve Barnett who played a large role in the resurgence of the telemark turn and the advancement of other backcountry skiing skills.

There are many excellent references on cross country ski trail design. Cross Country Skiing At Snowbasin is an excellent research paper by Robert Reese which deals with the feasibility of terrain and also looks at skier expectations. The 1990 Wyoming State Comprehensive Outdoor Recreation Plan (SCORP) provides important information on user characteristics, trends and issues, and is a valuable tool for planning what types of opportunities should be developed in a particular area. The Forest Service Handbook on Trails Management also offers guidelines in trail design and provides standards for ski trails that should be met on any Forest Service Trail.

An excellent publication that deals with trail design is Mountain Bike Trails: Techniques for Design, Construction and Maintenance by Mike McCoy and Mary Alice Stoner. It is very applicable because a good mountain bike trail is also often a good ski trail in the winter. Another excellent source for trail design specifications is Cross Country Ski Trail Planning, Development And Operation Considerations by Rodger Pekuri.

The available literature indicates many different types of cross country skiing. For this study, an understanding of three basic types of cross country skiing is important. Ski Touring (off track), backcountry skiing, and ski touring on groomed and set tracks using the diagonal stride and skating techniques.

The Medicine Bow National Forest enjoys adequate snowfall and terrain to suit all three types of cross country skiing. Therefore, it makes good sense to provide a range of skiing experiences for the public. Just by looking at the vast array of specialized equipment on the market, it is easy to see that skiers demand various types of opportunities. Skiing served a utilitarian need in the pioneer days of Southeastern Wyoming. It was a good way to get around for the early tiehacks, and miners. Skis were long and heavy, bindings were made of leather and boots did not provide much control.

But as skiing caught on, the equipment became better and so did the skiers. Eventually, skiing evolved into an activity enjoyed by all kinds of people for both work and play. In it's most basic terms, skiing is broken down into two categories, Downhill skiing and Cross Country Skiing. We will concentrate on cross country skiing and discuss how it is broken down further into various disciplines.

Ski Touring (off track) - This type of skiing is usually done on a marked trail or in unmarked country. The terrain is usually rolling and snow conditions are fairly constant. With the advent of newer and more dependable equipment, people can now negotiate rougher terrain and the limits of where they can go seem to have no end. Generally though, ski touring equipment is categorized as either light touring gear or backcountry gear. Light touring gear is more suitable for easier terrain, with fairly consistent snow conditions. Heavier touring gear will enable skiers to handle steeper terrain and variable snow conditions. As touring skiers improve in ability they usually will attempt tougher terrain and develop skills which allow them to turn and control their speed. The telemark turn is a good example of a skill that opens up whole new horizons for them.

The telemark turn is by no means new. It was in the mid 1800s that Sondre Norhiem from the Telemark region in southern Norway, developed a turn that enabled him and others to carve turns instead of skidding (Gillette 1988). The telemark turn was very popular up until the 1930s-40s when alpine skiing took over as the most popular form of skiing. Telemark skiing returned to popularity again in the early 1970s when skiers re-discovered the telemark turn. Heavy duty telemark boots and alpine like skis equipped with bindings that allow the heel to be free of the ski have given skiers the ability to ski virtually any type of terrain as well as any type of snow ranging from steep and deep backcountry slopes to the manicured slopes at lift served downhill areas.

Backcountry Skiing - The primary motivating force is the challenge of ascending and descending a particular mountain or a particular area. (Freeman, 1974). Equipment is heavy duty, boots are often alpine like made of plastic or synthetics, skis are wider and are used with climbing skins, or other gadgets which allow skiers to walk up steep inclines without slipping backwards. Skiers should have knowledge of avalanches and be equipped with avalanche rescue gear such as

shovels, probe poles and avalanche beacons. Ski mountaineering often includes winter camping. Good winter gear and a heavy backpack are standard fare for this type of skier. A good backcountry skier must know and use many techniques such as the telemark turn, kickturn and parallel turn, all depending on the terrain and snow conditions.

Photo 3. Winter Ascent of Indian Pass in Bridger Wilderness, Bridger Teton National Forest, by Richard Miller.

Ski Touring (set track) Ski touring on set tracks is done on a trail that has been mechanically groomed or packed with two parallel grooves cut into the snow which keep a person's skis from going from side to side or worse yet from crossing. A set track is a wonderful place for novice

skiers to learn the diagonal stride technique. This type of skiing obviously requires significant development and maintenance work. Trails are laid out in undulating topography with various combinations of uphill, downhill and flat terrain. The trails, especially at developed cross country touring centers, are well marked and the degree of difficulty is signed. Trails will either follow the fall line of the slope (straight downhill or uphill) or will require construction similar to a road crossing a slope, (Reese, 1986). It should be mentioned that oftentimes even if a trail does not have set tracks, but is at least packed, the skiers will have less difficulty in negotiating the trail because they will not have to break trail and their ski poles will not become buried when they push down on their poles. Equipment is generally lighter and faster. When competing on set track, racers will use gear that is ultra light and designed solely for the diagonal stride technique. The diagonal stride is arguably the most important technique needed for enjoyable cross country skiing.

Photo 4. Telemark skier being chased by Husky on Centennial Ridge, by Richard Miller.

Skating - this type of skiing requires a groomed trail but not a set track. The equipment used requires ultra light equipment. The boots are laterally stiff and are similar to ice skates without the blades. The skis are shorter than diagonal stride skis and are waxed for glide only whereas all other skis are waxed to provide for a kick and glide. Skaters will use set track on long downhill segment if a set track is available. Most nordic centers will have both skating lanes and set tracks on the same trail with the set tracks on either side of the skating lanes. Ski skating has even evolved into separate types based on technique: double pole technique, single pole technique, V skating, and marathon skating (Simoneau, 1985).

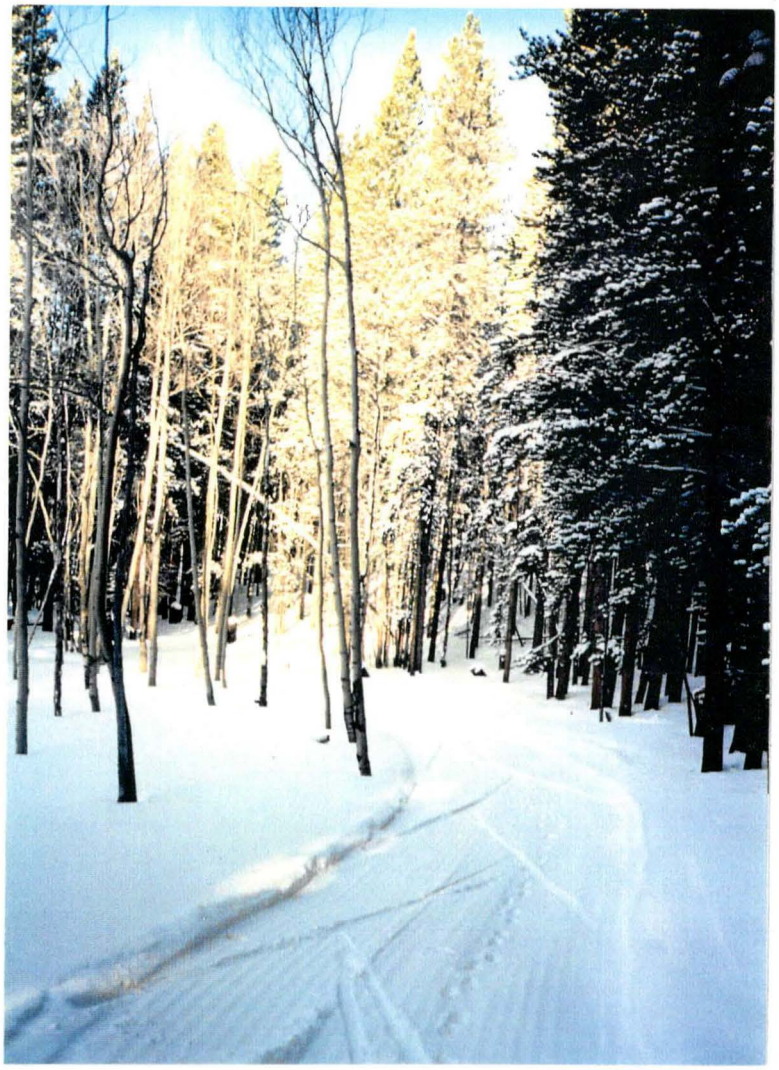


Photo 5. Impressions in the snow left by skating skier on the Meadow Loop, by Vern Bentley.

Methodology

Research for this project consisted of personal knowledge of the trail system gained from actually working on the trails when I was employed as a seasonal technician. Also, I gained first hand knowledge of how other skiers viewed the trails when I taught ski classes for the University of Wyoming Physical Education Department. I spent considerable amounts of time on the trails with skiers with varying degrees of skills and gained an understanding of what they thought were strengths and weaknesses of the trails.

I also visited with individuals who use the trails such as members of the local ski clubs, ski shop owners and employees and other ski enthusiasts who are knowledgeable about various skiing opportunities on the Medicine Bow National Forest.

The literature search provided me with knowledge of how other Forests and organizations have provided for various cross country ski opportunities whether they are managed under special use permit nordic centers or public trails systems. These documents provide guidelines for trail design and management and are very helpful in the planning of trails for skiing, hiking, biking and equestrians. It became clear that keeping abreast of equipment, technique, and users trends is important and that this information should always be part of the planning and management process.

The historical narrative of the trail system was generated from researching the origional NEPA document for the trail system, and the master plan that was done by the University of Wyoming Recreation and Geography Department. The historical narrative was an intregal part of my research because it answered questions as to how the trail system originated and how it evolved to it's present condition.

Current Management Situation

In order for the reader to fully understand the current management situation for the Snowy Range Cross Country Ski Trail System, a brief historical narrative is helpful. Cross country skiing in the Snowy Range area generally was confined to backcountry type experiences. Most skiers followed old roads, or skid trails left from old timber sales. Before 1988, there were only two parking areas along the Snowy Range Highway that winter recreationalists could use. One parking lot was at "the top" where the road is closed for the winter, approximately six miles above the forest boundary. The other parking area was at "the bottom" at the forest boundary. The most popular ski route was and probably still is the Barber Lake Trail which went from the top parking area down to the bottom parking area by way of several old skid roads and a service road that goes through the Barber Lake Summer Cabin Group. On many occasions, due to inadequate snow cover near the bottom, people would park along the highway at various places so they wouldn't have to ski across bare ground. This caused a dangerous situation particularly during the weekend when traffic is heaviest.

Other popular routes started from the end of the highway and accessed the high country above timberline. This area is popular to both skiers and snowmobilers because it is open country, easy to get around in and almost always has dependable snow. According to letters received during the scoping for the proposed ski trails, two of the biggest concerns were the lack of designated ski trails and conflicts between skiers and snowmobilers.

The recommendations made by the University of Wyoming Geography and Recreation Planning Class were for the most part excellent ideas. The plan for new trails and parking lots were definitely

needed. Why then, did the Laramie District end up with the sub standard trails which were dangerous? The main reason was that there was no one on the district during that period of time who had any experience with constructing cross country ski trails. The district took for granted that the recommendations made by the class were satisfactory whereas in some cases they were not. For instance, it was not prudent judgement to flag trails across riparian areas. However, a portion of the Libby Creek Trail crossed a meadow which was approximately 1/4 mile wide with willows over 8' in height and a meandering stream complete with beaver ponds. This section of trail has since been eliminated.

In the case of the Barber Lake Trail, the class suggested cutting a new trail across several steep side hills over 30 percent grade. This was totally unacceptable from the standpoint of leading skiers into potential avalanche areas. To compound the problem, the original Barber Lake Ski Trail was a tried and true route known to many skiers. No doubt the most popular pre-existing trail, it was unknown to both the planning class and the Forest Service. These are just two examples of the various mistakes which were common to the new trail system. The project was a classroom exercise designed to expose students to various facets of recreation planning. The Forest Service used their document as an inexpensive alternative to using experienced professionals within the Forest Service to plan the trail system. As the old saying goes, "you get what you pay for". In this case the Laramie District ended up with a trail system that was doomed for failure. During the first couple of years there was very little use of the trails. Negative comments were common in the local skiing community. Skiers would go out and ski the new trails and find out that the trails were bad and would not come back. Word of mouth quickly spread about such matters and soon the trail system gained a reputation as a "boondoggle", which was true.

In 1991, a new recreation staff officer by the name of Jeff Wallace transferred onto the Laramie District. Jeff quickly realized that I was determined to make improvements to the trails and took the time himself to become familiar with the trail system. He managed to appropriate some funding for more trail work. During the fall of 1991, a three person trail crew worked over the trails. They

cut hundreds of stumps, moved countless rocks, cut trees, rounded out corners and in several places rerouted whole segments of trails. The safety issues were mitigated. Maps were changed accordingly and we eagerly awaited the coming winter.

Photo 6. Happy skiers on the Camp Loop, by Vern Bentley.

During the winter of 1993, the trails have been used more than all previous years combined. We have started marketing the trails in the local newspapers and radio talk shows. New trailhead signs which are clearly visible from the highway showing the cross-country skier symbol have been installed. People have commented that they were never sure what the parking areas were for in the past, but now know that these are trailheads for nordic ski trails. Donation tubes were installed back in 1988, and received a meager $29.89 in donations. The donations are over $300.00

in 1993 and still coming in. When skiers donate money, it is a sure sign that they support our efforts.

Summer Operations

Currently, there is beginning to be low level use of the trails during the summer. From casual observations, several different types of use are occurring. These uses include day hikers, mountain bikers, and equestrians. The trails receive quite a bit of use from hunters during the end of September through October. The trails are often used by wildlife and together with the already mentioned summer users, the vegetation on the trails is starting to deteriorate with multiple treads starting to develop. Erosion problems are becoming noticeable and will become worse. Once the erosion process begins it naturally accelerates as trail conditions deteriorate and trail use increases.

Photo 7. Mountain Biker on the Pole Creek Ski Trail, by Beth Bentley.

The Medicine Bow National Forest recreation and engineering staffs decided that cross country ski trails should become "system trails" and be entered into the Forest Trails database. One of the reasons for this decision is because the trails are being used during the summer by a variety of users. This pro-active decision will hopefully help finance the work that needs to be done to make the ski trails become true "multiple use trails". The addition of these trails to the system will result in an added burden to the already large list of deferred maintenance projects with which the Medicine Bow National Forest is faced. Ignoring the summer use of the ski trails and managing them as winter use only is not a good alternative.

Proposals and Recommendations

It is not surprising that the Snowy Range Ski Trails are being used during the summer months. The Snowy Range Highway is also a Scenic By-way and also serves as the main arterial road through the Medicine Bow National Forest. Prior to 1988, there was no opportunity for trail access directly off of the highway until you reached Lake Marie where the Medicine Bow Peak trail starts. This is approximately 12 miles from the Forest boundary at an elevation of over 10,000 feet. Now, there are over 35 miles of ski trails with 3 trailheads and parking areas in that same distance. Not one of them is currently managed as a multiple use trail. **These trails access a myriad of recreational opportunities. Excellent fishing and hunting opportunities, mountain biking, hiking, photography, and horseback riding are only a few of the opportunities which could be available if the trails were managed as multiple use trails.**

Currently though, the trails are very rough, and accessible by only the hardiest of users. In the winter, they are much easier to use because of the snow and because they are used only by skiers. Rocks, and stumps which are covered in the winter are real obstacles in the summer. Slash and debris from the initial trail cutting are abundant and clearly visible along the edge of the trails.

According to the Medicine Bow National Forest Land and Resource Management Plan, the areas covered by the trails fall entirely within Management Area 2B. This designation allows for Rural and Roaded Natural recreational activities. It goes on to say that in these areas, recreation users can expect to gain access by walking, riding horseback or other means that do not require roads. In essence, the Forest Plan says that reasonable access should be available to people in this area. The ski trails are all accessible directly from the highway and already have trailhead parking. It makes good sense to turn these trails into multiple use trails. **People are going to use the trails regardless of their intended use. Since the decision to make the trails into "multiple use trails" has already been made, it is clear that these trails should have top priority when trail maintenance money is budgeted.**

Appendix A. shows a list of trail maintenance needs that will go towards bringing the trails up to standards set forth in the Forest Service Trails Handbook. It should be noted that if and when the trails are brought up to standards which will allow for multiple use, the skiing will also improve. Skiing can begin sooner and last longer because smoother trails require less snow to begin skiing.

Signing and Maps

Currently the trail system has a pocket trail map that is dispensed at the Laramie District and Supervisors's Office. The pocket map is also available at the Corner Mountain and Little Laramie Trailheads. Appendix B. shows the current map. It gives a fair description of the trails and there degree of difficulty. It is a confusing map to many folks though who are new to the area and to first time trail users. Some contour lines should be added to give the user a better idea of elevation gains and landmarks should be better identified and marked. All of the trails can be skied from any direction, but are probably more enjoyable to ski in a certain direction. The map should suggest the desired skiing direction which will inturn reduce conflicts between oncoming skiers thus making the activity much safer.

In March of 1993, the trails will be mapped using the Global Positioning System (GPS). This will give the district an opportunity to have reliable maps of the trails and also serve as a valuable tool for trail maintenance and development.

Trail signing

Signing on the trails during the first few years was very confusing. Intersections with signs pointing in various directions left most skiers unsure of where to go. One intersection actually had six possible ways to go with four different signs giving confusing information. This has since been eliminated by rerouting trails away from each other. Many of the original signs were made of plywood which turned out to be a desirable food source for porcupines. New signs made of redwood, are porcupine resistant, natural looking and weather well. Perhaps the most useful information medium is the pocket map carried by the skier. Used in conjunction with trail "locator" or destination signs, the pocket map keeps skiers informed of their locations on the trail (Pekuri, 1985). **The Snowy Range Trails currently have no locator or "you are here" signs. They should be installed in order to make the available pocket maps even more useful.**

There currently are no signs posted along the trails showing trail difficulty. If people are not already familiar with the trails, or carrying a map, they have no way of knowing the difficulty level of the trail. **These type of signs need to be installed and should be a top priority.**

Trailhead Improvements.

The trailheads at the parking areas still lack a basic trail system map. **As a minimum, this map should show the entire Snowy Range Cross Country Ski Trail System.** Other information that

should be available on a bulletin board together with the map would include rules of use, warnings for various hazards, location of nearest emergency assistance, and general trail information.

As stated earlier, people desire various types of opportunities such as groomed trails, trails which access the backcountry, and skating. Fortunately, all of these opportunities are available, but it is currently unclear where skiers should go to find the type of skiing they desire. They also need to know what difficulty level they will encounter. This type of information needs to be posted at the trailhead, as well as on the pocket maps.

All but one trailhead now have restrooms. The Corner Mountain Trailhead does not have a restroom. This particular trailhead is prone to high wind and would benefit greatly if a restroom facility was installed which also could be used as shelter from the wind. This would allow people to make equipment adjustments, wax skis, and a place to wait for others.

Photo 8. Vern Bentley and "Big Red" grooming the Bridge Loop, by Tom Florich.

Grooming

The majority of high-use trail systems should be planned so that grooming will ensure skiing safety and enjoyment. The current trend in demand is for more groomed trails. This does not preclude planning non-groomed trails in the more remote areas (Pekuri, 1985). There is no question, that groomed trails are easier to ski than trails that are left ungroomed. **Naturally occurring snow conditions such as slush, ice, deep powder, breakable crust together with sitzmarks and multiple tracks can create dangerous skiing. With grooming, these conditions can be minimized so that skiers will have more favorable conditions in which to ski.**

It was also found that grooming the trails provided the district with a quick means of monitoring the trails. It forced us to get out on the trails and do maintenance work. In order to groom trails, they must be free of stumps and downed trees and rocks in order to get a snowmachine and groomer over the trail. It was also proven over and over how much easier it is to manage trails during the winter when they are accessible by snowmobile. With so many miles of trails, it would be impossible for the district to monitor the the trails solely on skis. **Using snowmobiles to groom and monitor at the same time is efficient and has provided a means of insuring that the trails are in safe condition.**

Sidehills became a major consideration on whether or not a trail could be groomed. Adverse side slope can be roughly defined as exceeding 7 percent or more than a 1-foot drop in an 8-foot width across the trail or (8:1 slope). Avoiding adverse side slope conditions are unavoidable in certain places. In such areas it may be necessary to use cut and fill techniques in order to level the trail (Pekuri,1985). In the case of many of the Snowy Range Ski Trails, there are several trail sections that have sidehills of 7 percent or more. The Libby Creek trail and Medicine Bow Trail are currently impossible to groom because of this factor.

Another very important reason for designing trails which are accessible for snowmobile travel is for safety and emergency rescues. If a skier becomes injured and is unable to move, it is critical that he or she be rescued as soon as possible. At elevations over 8000 ft. during the winter, life threatening conditions can occur very quickly. If a trail is accessible to snowmobile, the chances for successful rescue are much higher.

Costs and benefits of Ski Trail Grooming

Grooming is expensive and time consuming. Snowmobiles are expensive and require upkeep, fuel and experienced operators. On the Tie City Cross Country Ski Trails, located on the east side of the Laramie District, the local cross country ski club has volunteered there time, labor and expertise to groom the trails with a Forest Service snowmobile and groomer. The trails are in the best shape they have ever been and they receive tremendous use. The Snowy Range Ski Trails are being groomed by a volunteer also and have received more use this year than they ever have. Grooming has proved to be very beneficial to the Laramie District. The district has invested in several snowmobiles and various grooming devices and made them available to volunteers to groom the trails which in turn has created excellent skiing opportunities. **Both the skiing community and the Forest Service are working towards the common goal of providing quality skiing. It is a partnership that is working out well for everyone.**

SUMMARY

The Snowy Range Ski Trails should be looked at as a learning experience. The trail system had a dubious beginning, but has since gone through several stages of improvement to where they currently are providing good skiing opportunities to the public. Hopefully this document will help

insure that the trail system will be improved even more and provide not just good skiing, but also high quality opportunities during the summer months.

Several lessons that should not be forgotten include the following. There is no substitute for proper planning. In this case, the Forest Service did not take the time and effort to insure that the end product was a quality trail system. Using the University of Wyoming Recreation and Geography Planning Class Development Plan as the only planning document used for the trail system was a critical mistake. The Forest Service ended up with a trail system that was dangerous, confusing and in several instances unusable for most skiers. The lack of proper planning resulted in the need to go back and correct safety problems, reroute trails, and eliminate whole sections of trails. It would have been much more cost effective to do it right the first time around.

Another important lesson that should not be forgotten is to employ people who have a genuine interest in Outdoor Recreation who are trained and experienced in their field. In this case, the Laramie District didn't have an employee who could provide the needed expertise in ski trail design. Nobody on the district had the ability to go out in the winter and make sure that the planned trail locations were acceptable which resulted in unsafe and unusuable trails. It should be evident now that employing people who are skilled in various outdoor recreation pursuits are valuable employees. Employees who have a genuine interest in recreation and have acquired various skills such as these will most likely do a better job and enjoy their work.

Marketing the Snowy Range Ski Trails needs to have more focus. Improving the trailheads will help. Word of mouth is always a great marketing tool and is starting to help increase use on the trails, however, more needs to happen. Partnerships between the Forest Service and local ski clubs, mountain bike clubs, equestrian users, church groups and Scouts are good ways to increase public awareness of the trails and also provide a source of manpower for trail maintenance. A trail brochure produced and sold by any of these clubs or organizations can be a valuable tool for dispensing trail information, and also be a source of funding for future trail maintenance and development. Involving the users should happen in all phases of trail development from preliminary planning to the actual finished product.

Monitoring the use of the trails is also a necessary part of managing the trails. There is no better way to monitor the trails than to go out into the field and see them for yourself. Get to know the users, and listen to what they have to say. Relying on other people's opinions and staying in the office reading about it in various reports and periodicals is no substitute for getting out and learning about the resource yourself. When the public sees that the Forest Service is actively involved and making informed decisions based on actual field work, it will build credibility and increase public acceptance of our decisions.

Proper monitoring of the trails should include a system for recording and responding to public imput. **A good way to do this is provide users with a comment ofr suggestion box at the trailhead. This information should be collected and used in future planning and management of the trail system.**

It is also important to keep statistical data on use in order to make good management decisions. Amount of use and type of use must be documented and recorded on a set schedule. **It should be important to the Laramie District to have this type of information so that when they make future management decisions for the trails that they are are based on good data as well as gut feelings based on personal experience.**

In closing, the one thing that current and future managers need to keep in mind is that we all make mistakes, but we need to learn from those mistakes. In the winter of 1988, while skiing the new trails, it was obvious that mistakes had been made. Hopefully this document will give the reader a knowledge of what led to those mistakes, what was learned from those mistakes and how they have been corrected. **It will provide direction for future development and maintenance of the Snowy Range Ski Trail System and serve as a reference for others when they are planning similar trail systems in other places.**

Bibliography

Cook, Bob. 1993. Conversations with Bob Cook. Cross country skier and Mountain Guide. Centennial, Wyoming. January.

Cramer, Ken. 1993. Conversations with Ken Cramer, Owner of Cross Country Connection Ski Shop. January.

Dyke, Nat. 1993. Conversations with Nat Dyke, Volunteer Ski Trail Groomer and Ski Racer. January.

Exall, Mike. 1985. Cross Country Ski Trail And Facility Design Manual. Ontario Ski Council. Willowdale, Ontario.

Gillette, Ned and Dostal, John. "Cross country Skiing". The Mountaineers, Seattle Washington.

Hull, Casey. 1993. Conversations with Casey Hull, longtime friend and fellow skier, Laramie Wyoming. January.

Jacobsen, Van. 1993. Conversations with Van Jacobsen, President of Laramie Cross Country Ski Club. January.

Johnson, Jeff. 1992. Conversations with Jeff Johnson. Recreation Technician, Snow Ranger, Tensleep District, Big Horn National Forest. December.

Land and Resource Management Plan for Medicine Bow National Forest and Thunder Basin National Grassland. 1985.

McCoy, Michael and Stoner, MaryAlice. "Moutain Bike Trails: Techniques for Design, Construction and Maintenance". Bikecentennial, Missoula, Montana. USDA Forest Service Missoula Technology and Development Center.

Miller, Richard 1993. Conversations with Richard Miller. Back country ski enthusiast. Denver, Colorado. January.

Perla, Ronald and Martinelli, M. "Avalanche Handbook". Agriculture Handbook 489 USDA, Forest Service.

Pekuri, Roger. "Cross Country Ski Trail Planning, Development And Operation Considerations". Research Paper produced by Rodger Pekuri, Civil Engineer, Superior National Forest.

Reese, Robert. 1986. "Cross Country Skiing At Snow Basin" Clemson Field Project. Supervisory Landscape Architect, Ogen Ranger District, Wasatch Cache National Forest.

Robertson, Rodney 1993. Conversations with Rodney Robertson, Volunteer ski trail groomer and avid skier. Centennial Wyoming. January.

Tupala, Jeffrey. "Design And Maintenance Guidelines for Groomed Trails For Colorado Cross Country Ski Association". Masters Thesis for Landscape Archetechure, University Of Colorado At Denver, and conversations with Jeff Tupala, February 1993.

University of Wyoming Geograpyhy and Recreation Department. 1986. Snowy Range Cross Country Ski Development Plan.

Wallace, Jeffrey 1993. Conservations with Jeffrey Wallace, Recreation Forester, Laramie Ranger District, Medicine Bow National Forest. October.

Appendix A. Trail Maintenance Project Listing

Ridge View Trails:

North Fork Loop:
1. Build water bars in areas that are experiencing drainage problems.
2. Establish single tread where there are multiple treads forming.
3. Remove slash along side of trail and scatter or pile to be burned later.
4. Install restroom facilities at trailhead.

Camp Loop
1. Build water bars where needed.
2. Widen outruns on steep sections.
3. Install directional signs at intersection of Camp Loop and North and Camp Loops.

Little Laramie Trails:

River Loop
1. Install two bridges where trail crosses North Fork of Little Laramie River.
2. Install aproximately 100 feet of snow fence along trail as it exits the parking area to prevent drifting which has led to dangerous sidehills.
3. Build waterbars as needed.

Meadow Loop
1. Widen steep downhill sections to allow for safer skiing during times when snow conditions are fast.
2. Build water bars as needed.
3. Relocate 300 feet of trail out of riparian area, located right before trail crosses Sand Lake Road.

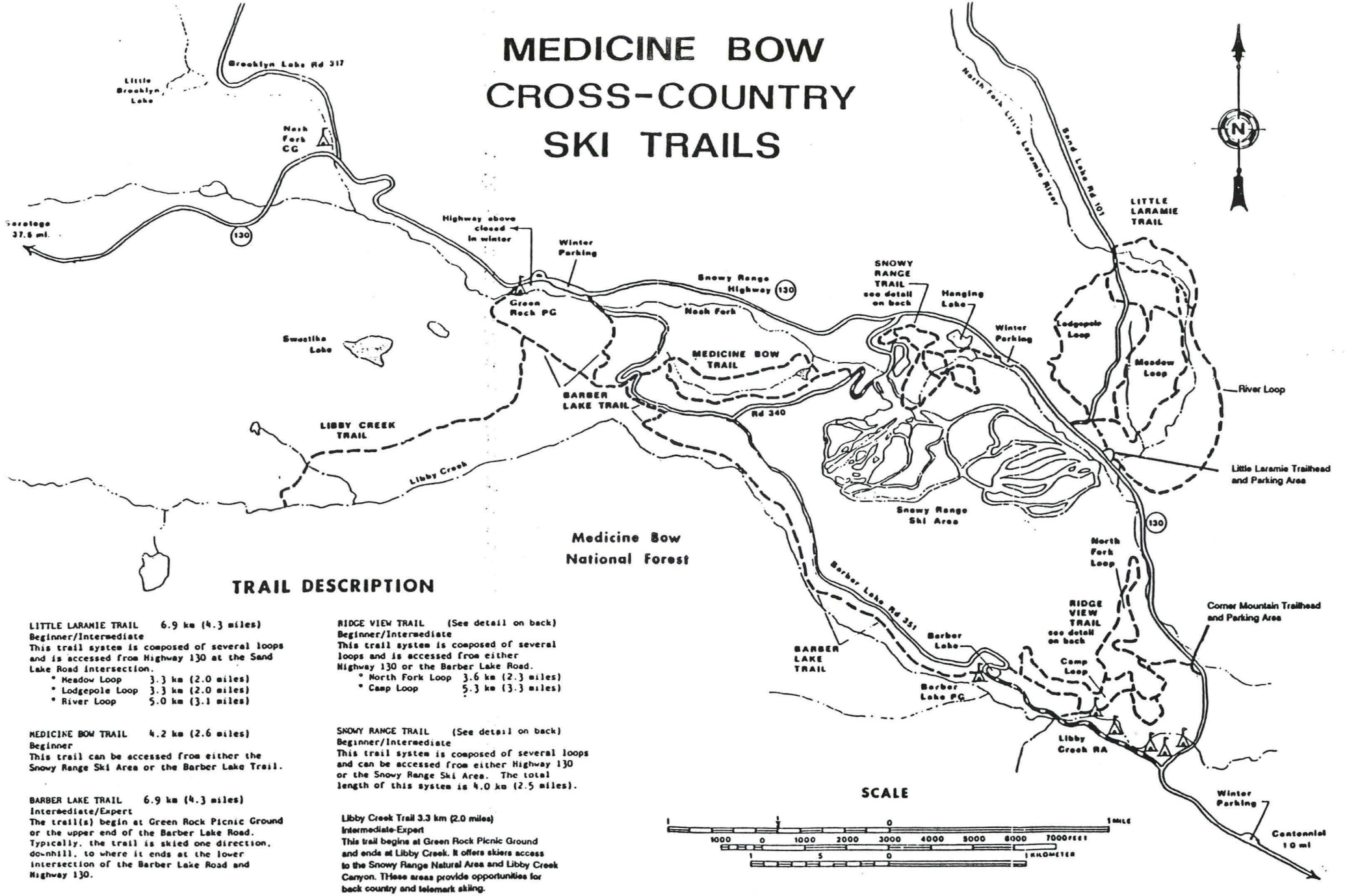
Medicine Bow Trail:
1. Further maintenance on this trail should wait because it will very likey be elimininated with expansion of the Snowy Range Ski Area.

Barber Lake Trail:
1. Install trailhead bulletin board.
2. Build water bars as needed.

Libby Creek Trail:
1. Cut and fill numerous sidehills.
2. Remove large boulders and rocks along the initial 100 yard of trail.
3. Connect Libby Creek Ski Trail with the Libby Creek Canyon road which will allow skiers to ski the trail as a loop or keep going down the canyon on the Barber Lake Trail. (note: the Libby Creek Canyon road is an abandoned road which once was the main road prior to the 1930s. It is grown over in many places but with minimal clearing, it will make an excellent ski trail).
4. Build water bars as needed.
5. Install trailhead bulletin board.

Appendix B. Pocket Map

MEDICINE BOW CROSS-COUNTRY SKI TRAILS



TRAIL DESCRIPTION

LITTLE LARAMIE TRAIL 6.9 km (4.3 miles)
Beginner/Intermediate
This trail system is composed of several loops and is accessed from Highway 130 at the Sand Lake Road intersection.

- Meadow Loop 3.3 km (2.0 miles)
- Lodgepole Loop 3.3 km (2.0 miles)
- River Loop 5.0 km (3.1 miles)

MEDICINE BOW TRAIL 4.2 km (2.6 miles)
Beginner
This trail can be accessed from either the Snowy Range Ski Area or the Barber Lake Trail.

BARBER LAKE TRAIL 6.9 km (4.3 miles)
Intermediate/Expert
The trail(s) begin at Green Rock Picnic Ground or the upper end of the Barber Lake Road. Typically, the trail is skied one direction, downhill, to where it ends at the lower intersection of the Barber Lake Road and Highway 130.

RIDGE VIEW TRAIL (See detail on back)
Beginner/Intermediate
This trail system is composed of several loops and is accessed from either Highway 130 or the Barber Lake Road.

- North Fork Loop 3.6 km (2.3 miles)
- Camp Loop 5.3 km (3.3 miles)

SNOWY RANGE TRAIL (See detail on back)
Beginner/Intermediate
This trail system is composed of several loops and can be accessed from either Highway 130 or the Snowy Range Ski Area. The total length of this system is 4.0 km (2.5 miles).

Libby Creek Trail 3.3 km (2.0 miles)
Intermediate-Expert
This trail begins at Green Rock Picnic Ground and ends at Libby Creek. It offers skiers access to the Snowy Range Natural Area and Libby Creek Canyon. THese areas provide opportunities for back country and telemark skiing.

SCALE

1 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 5 0 KILOMETER

TRAIL COURTESY

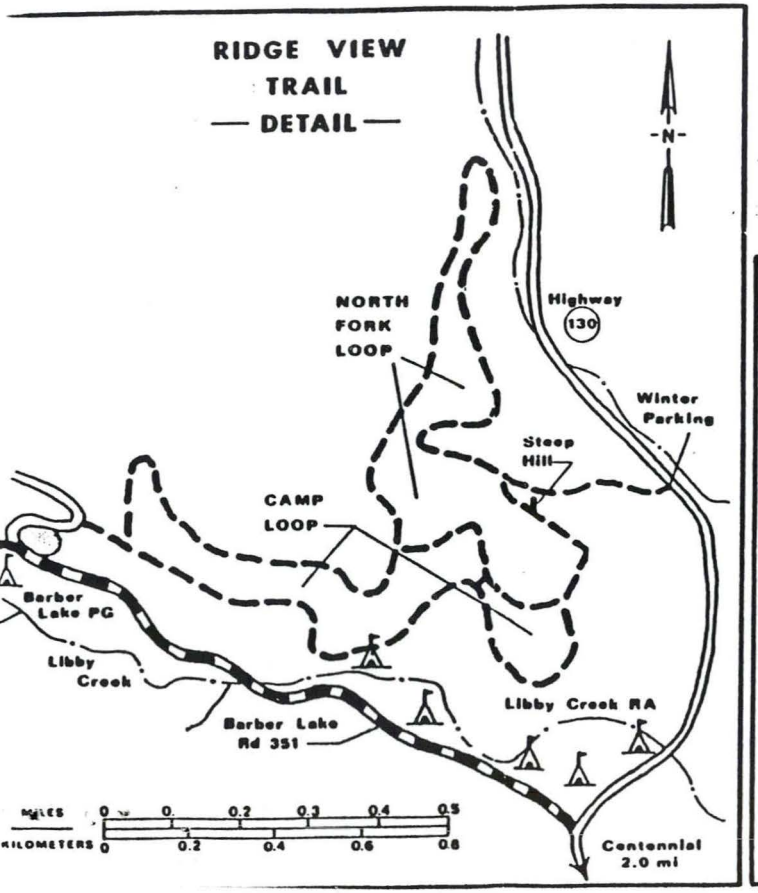
Snow machines are prohibited on ski trails except those portions that coincide with the Sand Lake Road and Barber Lake Road.

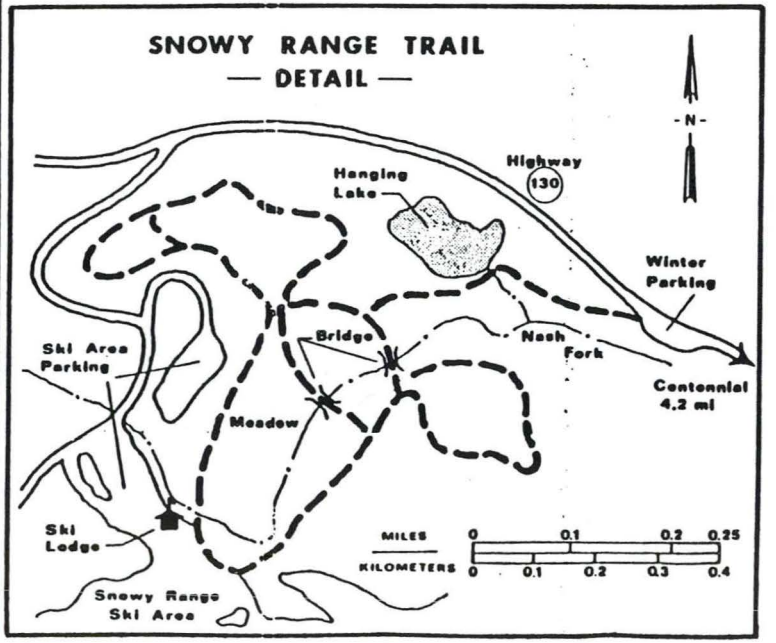
- Please control and clean up after your dog.
- Pack out all litter and trash.
- Allow faster skiers to pass.
- Be alert and move aside for skiers coming downhill when you are skiing up steep hills.

WINTER SAFETY

- Check weather forecasts before leaving home.
- Let someone know where you are going and time of return. Avoid skiing alone.
- Avoid hypothermia by staying warm and dry. Dress in layers and avoid overexertion.
- Remember storms can move in unexpectedly. Be prepared!
- Carry a pack for extra clothing and survival equipment.
- Suggested items for survival kit:
  Waterproof matches or lighter, fire starter, tent or space blanket, cord or rope, compass and map, mirror, flashlight, knife, whistle, extra gloves, hat and socks, high energy food, extra water, first aid kit, sun glasses, chapstick.
- Nearest phones are at the Snowy Range Ski Area and Centennial. Dial 911 in emergencies.

As a user of national forest system lands, you have significant responsibility for your personal safety during any activity you might pursue. The Forest Service does install signs and other information devices at various locations where site conditions warrant; however, the size of the National Forests and the variety of natural and man-made conditions limits placement of signs or other specific warnings and necessitates the use of more general education efforts. Hazards are not limited to, but include: changing weather conditions; snow; avalanches; landslides; caves; overlooks; falling trees or limbs; high or rushing water; contaminated water; wild animals; becoming lost or over exerted; hypothermia; remnants of mining and other activities involving excavation, tunnels, shafts, decaying structures and a variety of equipment; and changing road and trail conditions. You may also be exposed to unreasonable acts of others. The Forest Service does not manage or control all of these occurrences. It is your responsibility to know the hazards involved in your activities and to use the proper safety procedures and equipment to minimize the inherent risks and hazards related to your activity. In order to help visitors enjoy their experience on the National Forests, the Forest Service and other agencies provide information regarding local conditions by various means. This information is available at forest Service offices, from local residents, outfitters and guides, and other reference materials.





Laramie Ranger District
Medicine Bow National Forest
USDA FOREST SERVICE

MEDICINE BOW CROSS-COUNTRY SKI TRAILS

Revised 1992

Appendix C. Photo Credits

Cover Page. Meadow Loop Trail, by Vern Bentley.

Photo 1. Local area LDS Church group volunteers help pile slash on the North Fork Loop, by Tom Florich.

Photo 2. Dangerous stumps, by Vern Bentley.

Photo 3. Winter accent of Indian Pass in Bridger Wilderness, by Richard Miller.

Photo 4. Telemark skier being chased by Husky on Centennial Ridge, by Richard Miller.

Photo 5. Impressions in snow left by skating skier on the Meadow Loop, by Vern Bentley.

Photo 6. Happy skiers on the Camp Loop, by Vern Bentley.

Photo 7. Mountain Biker on the Pole Creek Ski Trail, by Beth Bentley.

Photo 8. Vern Bentley and "Big Red" grooming the Bridge Loop, by Tom Florcih.